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20. Delicate and light *French Manchet*, toasted, may possibly be also good for our Sapps.

21. For the clearing of what was delivered *Num.* 43. p. 858. about *prickt Circles* in Trees, it may be added, That those *Circles* are suppos'd to be at some time of the year of one single row of *pricks*, and at some season, of more, and at others, of solid wood. *Quere*, 1. What alteration is found in *Circles* of *Pricks*, or *Wood*, in Spring, at Midsummer, and in Autumn &c? 2. Whether these single or double *Circles* of *pricks* and coats of *Jelly* or wood, increase betwixt the inner and outward bark, or not? Or, betwixt the one and both of the barks, *i. e.* on one or both sides of the inner bark? I conceive, it doth on both sides of the inner bark, so that in some thick outward *Barks* those *Circles* may be observ'd, as in *Wood*. 3. Whether the Tree receives increase in all its inner coats, so as every coat yearly grows thicker, or in the outtermost only, or in some of the outward coats also?

Dr. Iohn Beals Instances

Promised in Numb. 42. and intended to shew the Correspondence of the Pith and Timber, with the Seed of the Plant; and that of the Bark or Sap in the bark, with the Pulp of the Fruit, or some encompassing Coat, or Cod, containing the Seed.

The Author having prefaced, that he can promise no Method in the following Communications, gives these Instances.

First, *saieth he*, I had an excellent *Summer-Apple*, containing abundance of very pleasing Iuyce. It was of that kind, which never grows large. The Body by the burthen of the fruit always wreath'd towards the ground; the Branches all curl'd, and full of knots at every turning; and these branches apt to grow, if a good knot be set in the ground, as soon as 'tis cut off, especially about *Candel-masse*. This Tree was hollow, and very near all the Timber extremely rotten from the top of the Stem to the root; and every sprigg, how small however, appear'd Cork-color'd and rotten at the heart of the Timber. And so it was generally all over the Roots; and 'tis like, it had been so many years before: Yet the Tree bore abundantly.

dantly with alternative rest every second or third year. The fruit had scarce any core; the kernels were very small, thin and empty; nevertheless the branches from the knots grew well enough to replenish a Nursery for me. This seems to indicate the Correspondence between the Pithy part, Heart or Timber, and the Seeds. And more to confirm this; A young tree grew like a Sucker from the only sound Root of the aforesaid Apple-tree. This tree grew straiter then others of the same kinde usually do; of which I conceive the cause to be this: Suckers are commonly barren a pretty long time; and this continued barren, til the stem was strong enough to bear the fruit which loaded the branches. But that, which makes to our purpose, is this; All the fruit of this young tree had full and sound Kernels; and though it was the same fruit, growing from the Root of the same tree; yet it seem'd not altogether so tender, delicious and juicy, as the fruit of the old tree; nor yet was the tree so fruitfull. The Sap in the old tree was less diverted, it seems, to sustaine the life of the timber, which was now consumed; and thereby was wholly appropriated for the leaf, blossom, and the pulp of the fruit. For I do not undertake, that the Sap yeilds no relief to sustain the life and growth of the timber *ordinarily*, and whilst the timber is entire; but I rather conceive, that there is a more immediate and peculiar relation between the Sap and Pulpous fruit, and the like between the Timber or whole stock, and the Root of the Tree, to transmit the same spirit and nature to the Seed of what kind soever it be.

Some are of opinion, that there passes into the Timber no part of meer Earth to sustain the life and growth of the Plant, but it only feeds on the succulent part ascending by the Roots, and on the Air, and the moisture, which the Dews of Heaven, the Rainy seasons, and the Air afford. And if we consider, that some lofty trees grow upon the Rocks, where little or no earth can be found; as also, how largely the Oak and Pear-tree grows and spreads, and how many years the one bears Acorns, the other Pears, sometimes to the quantity of yeilding 5. or 6. hogs-heads yearly (as I have known them do;) and in comparison how little wast of Earth about the roots appears; we may find more cause to attribute this large expence of materials to the perpetual

petual supply of Moisture, than of much Earth. I will give you an experiment, which may seem to determine the point, though I yet suspend my Judgment.

took the largest of *Kentish* Codlins, Pearmaines, Peppins and Deuxans; I wither'd them (which may be soon done many ways;) and then I cut them in the middle quite through the midst of the kernels, having carried them some dayes in my pocquet: all that saw them, took them to be very wood, and they were indeed like very close Cork. And some Philosophical persons (though I affirm'd no falshood, but concea'd the whole matter) did upon the view spread it abroad, that I had the *Art of converting* all *Fruit* into Wood; pulp and kernels and all was wood. The same may be done upon Pears, Cowcumbers, Turnips, and all the Grains and Vegetable Seeds, that are stuck in them, and are cherish'd by a supply of Marly Water. Thus I have had the blades of Wheat and the helme of Pease grow out of them to the length of a foot, and then by hanging it in a closet, all becoms turn'd into wood; and in some time after, all is turn'd into Dust and Earth. And as we are well taught by Master *Boyle*, that pure Liquids may be converted into Earth; so these Terrestrial parts of the Fruit may be from the Liquors thither collected, and derived from the Mass of the Earth.

But to return to the clearing of the affinities above claimed; I Instance in *Berberys* roots, perforated by me, which bore Berries, that had no stones at all: And in hollow'd Apple-trees the kernels will be very thin, and empty skins, and incapable of growth. Gardeners tell me, that if you take the hard stick out of the root of Parsly, it will bear no kind seed. But it may be objected, that a very hollow *Oak* and an hollow *Elme* doe bear pregnant seed. I answer, that an *Elme* is all Timber to the Bark; and an *Oak*, when 'tis all putrid at the heart, yet may have firm wood enough to convey the Spirit of the root into the Acorn; and the Roots may be found, when the Body of the Tree is much decayed by rain, beating in at the lopp'd tops, or by other passages through the Bark. We see, that *Beans*, *Wheat*, and other Grain grow kindly, if the Eyes and parts next adjoining be whole, though the *Beans* be full of great holes in other parts, or the main body of the *Wheat* be cut off with Scissers.

However, let the objection give us the more Caution, that, if we design to a Fruit without Stones, the perforation may be the bolder and the more compleat.

And to proceed further, some Trees are lesse fruitfull, or altogether barren by the excessive growth and firmness of the Timber; and these are recover'd by cross deep hackings through the Bark: And such injuries done to the Timber both in the Stem and main Roots, they cleave the Roots, and put a stone in the cleft, that it may not close again too hastily. If this violence be not done both to the Stem and Roots, the remedy may fail. We see also, that *Vines* are less fruitful, when they are permitted to run out into many woody branches.

II. To shew also the Proximity between the *Sap* of the Bark and the *Pulp* of the Fruit, I did in Summer-time make Rests for water on the body of *Kentish* Codlin-trees, and caus'd water to be frequently powred into those Cavities. The effect was this, the Apples grew to an extraordinary bigness, and were very insipid, and many of them had parts in appearance much like the pulp of *Lemons*: some I suffered to hang on the Tree as long as they would, and those became full of Spots of the Colour of Corke, or like the rottenness of an Apple.

I omit the rest, and hasten to redouble a remark of the great use, which may be made of the cheif Experiment. The Graft carries the mastery from the *Stock* for the *Pulp* of the fruit; So that we have little hope of much change by *meer* Graftings, how oft soever iterated. But if after many, and strange, and choice Engraftings you set the Kernel, Stone, or Seed of the grafted Fruit in a Kind Mould, you may then expect some new or mingled kinde of Plant, as *Semi-Apricocks*, &c. And thus the *Almond* and *Peach* may by many changes in the Graftings, and by Inteneration of the Stones of the Peaches, and of the Shells of the Almonds, and by Terebrations of the Stem and Root here and there, alter their guises, so that the Coat of the Almond may approach to the Pulp of the Peach, and the kernel of a Peach be enlarged to a kinde of Almond; and great store of better contrivances may from hence take rise.